

Exposure Time Tables

Dr. Max Leo System
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No. I Time of Day and Year

Hour after noon	January	February	March	April	May	June	July	Northern Hemisphere
5	7	8	9	10	11	12	1	
6	6	7	8	9	10	11	12	
7	5	6	7	8	9	10	11	
8	4	5	6	7	8	9	10	
9	3	4	5	6	7	8	9	
10	2	3	4	5	6	7	8	
11	1	2	3	4	5	6	7	
12	1	2	3	4	5	6	7	

No. II Object to be exposed

Object to be exposed	Northern Hemisphere												Southern Hemisphere		
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec			
Dark interior	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Light interior	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Reproduction at the window	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
at 6 feet distance from the window	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
at 3 feet distance from the window	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
at the window	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
beneath dark trees	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
beneath light trees	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
In open air	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Architecture (dark)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Architecture (light, white)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Narrow street	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Large street	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Public squares, Race-course	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Strand, Downs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Scenes on sea and ashore	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Dark fore-ground (foliage)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Light fore-ground	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Distant, no fore-ground	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
with fore-ground	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
without fore-ground	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Clouds	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

No. III Dryplate

Aperture	80	110	130	160	180	190	210	230	270	300	Attention
Scheiner	400	820	1330	2760	3510	5700	9300	12000	35000	72000	Attention
Hunter & Driffield	400	820	1330	2760	3510	5700	9300	12000	35000	72000	Attention
	3	7	1	4	3	2	0	-2*	-4*	4	17

* These values must be deducted from the sun total.

EXPOSURE TIME TABLES

The figures indicated in this chart apply especially to countries situated as follows:

In the North from 30° septentrional latitude as, for example: Europe, Siberia, China, Japan, North Africa, U. S. A., Canada.

In the South from 30° meridional latitude, as, for example: Argentina, Chili, The Cape, Southern Australia.

Take one half of the values obtained by means of this table for the following countries:

At the Equator and northward as far as 30° septentrional latitude, as, for example: Mexico, Sudan, India,

in the months of January February March

at the Equator and southward as far as 30° meridional latitude, as, for example: Ecuador, Venezuela, Brazil, Bolivia, Peru, South Africa, Central

and North Australia, in the months of June May April

December November October

in the months of July August September

Flash-light table

Indicating the quantity of powder to be used (in grams) for dry-plates Scheiner 135. Take half for 210 Scheiner, and double for 140 Scheiner.

Distance from flash to object m	Diaphragm											
	F:4.4	F:5.6	F:8	F:11.5	F:11	F:16	F:22	F:28	F:36	F:45	F:56	F:72
1.00	0.15	0.30	0.60	0.90	1.2	2.5	3.5	5.0	7.0	10.0	14.0	20.0
2.00	0.22	0.44	0.88	1.32	1.8	4.0	5.5	7.5	10.5	15.0	21.0	30.0
3.00	0.44	0.90	1.80	2.70	3.6	8.0	11.0	15.0	21.0	30.0	42.0	60.0
4.00	0.75	1.5	3.0	4.5	6.0	12.0	16.0	22.0	30.0	42.0	60.0	84.0
5.00	1.0	2.0	4.0	6.0	8.0	16.0	22.0	30.0	42.0	60.0	84.0	112.0
6.00	1.5	3.0	6.0	9.0	12.0	24.0	33.0	45.0	60.0	84.0	112.0	150.0
10.00	2.5	5.0	10.0	15.0	20.0	40.0	55.0	75.0	100.0	140.0	190.0	260.0

For all kinds of photographic work
the excellent Zeiss Ikon

Roll films Film packs

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No. IV

Lighting

Objects, which in the shade, when the sun shines, are not directly struck by the light rays, come within 2 (slightly clouded) unless table II (diffused light) is already used

No. V	Diaphragm											
	F:1.4	2	2.8	4	5.6	8	11	16	22	32	45	63
Continental Scale	F:1.6	1.8	2.2	2.7	3.2	4.5	6.3	9	12.5	18	25	36

No. VI

Exposure Time

Total	1	2	3	4	6	8	12	15	20	30	50	60	90	120	180	240	360
Seconds	1/1000	1/1000	1/750	1/500	1/400	1/300	1/200	1/150	1/100	1/75	1/50	1/40	1/30	1/25	1/18	1/12	1/8
Minutes	1	1 1/2	2	3	4	6	8	12	15	20	30	40	60	90	120	180	240

How to use it

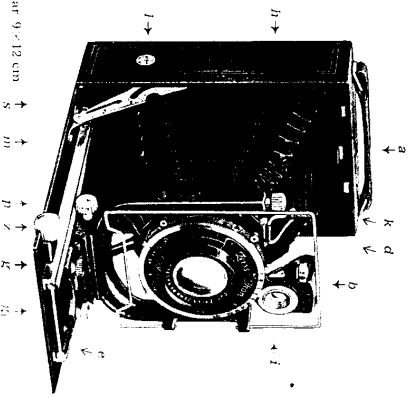
Take from Tables I to V the red numbers respectively, the total sum of which gives in table VI the time of exposure; e. g. intended exposure: End of May, fore-noon 10 o'clock (Table I No. 1), landscape with foliage in the fore-ground (Table II No. 1), dryplate 180 Scheiner (Table III No. 1), sunny sky with white clouds (Table IV No. 1), and diaphragm 1/18 (Table V No. 1). Values found:

No. 1: in table VI indicates 1/8 of a second as the correct exposure time.



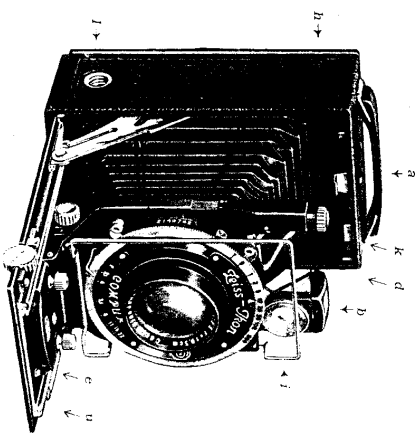
Zeiss Ikon A.-G. Dresden

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Maximart 9 x 12 cm S m p d r k

- a = Spring catch for holding the base-board closed
- b = Brilliant view finder for use at waist level
- d = Sighter (not to be seen in the illustration)
- e = Focusing scale
- gg' = Knobs for pulling out the front carrying the lens
- h = Knob for actuating the rising front movement
- l = Frame view finder (teometer) for use at eye level
- k = Spring for the retention of the focusing screen or the plate-holder
- l = Screw-thread for the tripod for horizontal exposures
- m = Screw-thread for the tripod for vertical exposures (not to be seen in the illustration)
- p = Knob for actuating the cross front movement
- s = Struts locking the opened base-board
- z = Knob actuating the rack and pinion movement



Trona 6.5 x 9 cm S m p y z R w gg'

- a = Spring catch for holding the base-board closed
- b = Brilliant view finder for use at waist level
- d = Sighter (not to be seen in the illustration)
- e = Focusing scale
- gg' = Knobs for pulling out the front carrying the lens
- h = Knob for actuating the rising front movement
- l = Frame view finder (teometer) for use at eye level
- k = Spring for the retention of the focusing screen or the plate-holder
- l = Screw-thread for the tripod for horizontal exposures
- m = Screw-thread for the tripod for vertical exposures (not to be seen in the illustration)
- p = Knob for actuating the cross front movement
- s = Struts locking the opened base-board
- u = Knob releasing the infinity position
- w = Knob releasing the single extension
- y = Locking device for the rack and pinion knob for the focusing screw z
- z = Knob actuating the rack and pinion movement

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3

Instantaneous exposures

Turn ring (R) till the speed chosen is on index mark (A). Set the shutter by moving lever (L) to the right to the limit of motion. — Release the shutter by a pressure on the lever (D) or on the flexible release. — Lever (U) is used only for instantaneous exposures. When the shutter is set for T or B, this lever is locked. Besides the engraved speeds of 1, 1/2, 1/5, 1/10, 1/25, 1/50 and 1/100 of a second, intermediate speeds can be obtained by placing the index (A) between two of the engraved speeds. This remark does not apply to speeds higher than 1/1000th of a second. **The Iris diaphragm** Set the diaphragm scale indicator (E) to the number representing the aperture of the iris it is desired to use.

When using the delayed action release proceed as follows:

Instantaneous Work with the delayed action release for speeds from 1 up to 1/100th of a second. Set shutter as previously described by means of lever (L). Then push button (F) aside in the direction of the arrow and move lever (L) a little farther on, till it is arrested a second time.

A pressure on lever (D) will set the clock work of the delayed action release in motion and after about 12 seconds the release will discharge the shutter at the set speed indicated on dial (R).

NOTE. The delayed action release is not available for use with time exposures nor for speeds higher than 1/100th of a second. When setting the shutter particularly when using the delayed action release and higher speeds, it is advisable to exert a counter-pressure on the shutter bearing in order to avoid excessive wear of the mechanism and of the metal parts of the camera front.

Instructions

for using the

“Maximart” Cameras

for Plates and Film Packs

“Trona” Cameras

for Plates and Film Packs,
with extra-luminous lens
Zeiss Tessar F/3.5



Zeiss Ikon A.G. Dresden

V 2518-3444

When used with a double extension, they permit a much nearer approach from objective to object, thus enlarging the object, according to their different strengths, at the highest to nearly double its natural size.

While pressing the scale (e) to one side with the middle finger, use index and thumb to pull out the lens carrier by the two pegs (gg₁) to the extreme end of the base runner as far as it will go, and actuating the rack and pinion movement with the aid of the knurled head (z) focus sharply on the ground glass screen. When pulling out the front of the Troina 6.5×9 cm seize the knobs gg₂ (with thumb and middle finger) and at the same time exert pressure with the fourth finger on the knob w.

When using a supplementary lens, focus at full aperture of the diaphragm, but, except for portrait work, reduce it for the exposure to get a good definition all over the plate and a better depth of focus.

With Troina camera and Tessar 1:3.5 the focusing has to be done very carefully, as these extra luminous lenses have a limited depth of focus, and the full opening should be used only for portraits, highest speeds or very bad light conditions.

The finders

The well known "Brilliant" or reflecting view finder calls for no special explanation. It is normally in position for a vertical picture and turns on a pivot for horizontal pictures.

Take care that it is returned to its normal position before closing the camera.

In addition to the Brilliant finder the camera has a direct vision ("Icometer") view finder which consists of a wire frame at the front and peep-sight at the narrow side of the camera. The wire frame is hinged on one side and is swung into position as required. The sight

BEFORE USING THE CAMERA

Read the instructions carefully with the camera before you and make yourself familiar with all the various movements, shutter adjustments, &c. By so doing, you are less likely to make any mistakes when making your first exposures.

Do not use force

No force need be applied in working any movements or adjustments of the camera or shutter. All parts are carefully adjusted and tested and if any slight hitch occurs, you may find that you are not handling the instrument quite correctly.

To open the camera

Press on the concealed button (a). The base-board will then spring out and should be drawn down till it snaps into position by means of the side struts (s).

Focusing

The bellows should be extended by gripping knobs (gg₁) between forefinger and thumb, pressing them towards each other, and pulling the standard front out till stopped by the infinity catch (oo).

The lens is now in position for photographing objects at distances surpassing those marked on the scale.

To focus on nearer objects, measure or estimate the distance as accurately as possible, then draw out knob (z) and by turning it, move the index, which glides over the focusing scale, upon the number which corresponds to the distance. Then fix the extension by pushing knob (z) inward.

With the Troina Camera 9×12 cm draw out the lock (y) in order to be able to turn the knob (z) and secure the front by pushing the catch inwards.

is behind the wire frame and should be used as close to the eye as possible.

The advantages of the "Icometer" finder when raising the camera above walls, hedges and other obstacles, are obvious, another point of importance is that the view is photographed at eye level.



The brilliant view finder



The rising front movement

The front is raised perpendicularly by the screw (h). This movement is very useful when photographing high buildings, &c., or when it becomes necessary to reduce foreground.

The cross front movement

has the same use for horizontal pictures and is moved by using the screw (p). With the Maximar 10×15 cm the cross movement of the objective is effected by loosening the screw (t), which must be tightened again to hold the front firmly in position.



The cross movement of the Maximar 10×15 cm

With the Troina Camera 6.5×9 cm the lock (y) is not pulled out, but simply swivelled outwards and inwards. Furthermore, when desiring to photograph at near distances with this camera it is necessary to release the infinity catch by exerting pressure on the knob u.

The focusing can be done also without using knob (z) by pressing with one hand the scale (e) inward and drawing the front forward with the other hand till the edge of the pointer, which runs over the scale, rests on the number which corresponds to the distance from the object. For very accurate focusing or stand work the focusing screen should be used in preference to the scale. Set the shutter on time and open it. Give the lens full aperture to get as much light as possible on the screen. Unfold the hood of the screen, pull out screw (z) and by turning it move the lens forward till the picture on the ground glass becomes sharp.

The double Extension

is useful in all cases where large figures are to appear in the picture and where the desired result is achieved either by approaching the object or by a variation of the focal length with the aid of supplementary lenses.

For use as supplementary lenses we recommend the Zeiss Distars and Proxars, in conjunction with a Zeiss Tessar or a Dominar Anastigmat, and the Zeiss Ikon Delta lenses with a Novar.

Distar and Delta lenses require a camera with a long (double) bellows extension; they increase the focal length of the camera lens, according to their different strengths, at the highest nearly twice, diminishing the image field while the objects contained in this field are enlarged.

Proxar lenses shorten the focal length of the camera lens, and when used with a single extension camera, show a larger image field, while the objects contained in this field are reduced in size (wide angle exposures).

set the focus by scale at ten feet, and then see by looking at the ground glass whether your guess was a good one. Do this for longer and shorter distances, verifying your judgment with a tape measure; and after a little practice of this kind your ability to judge distances will be greatly improved.

Use of the film pack

The pack provides perhaps the most convenient form of daylight loading film. It is certainly more quickly loaded than roll film, and the changing of film between exposures is at least as quickly effected. Then above all is the advantage, the pack affords, of ground glass focusing when desired — this being particularly valuable in cameras whose long bellows extension can be used for close range work only when the operator can focus on the ground glass.

Certain characteristics of film pack must be borne in mind, however, and certain precautions observed, to get best results. Film does not and cannot be expected, because of its flexible nature, to present such a perfectly flat plane surface as does a glass plate. Therefore it is advisable, when using film packs, to employ a rather smaller lens opening than would be used with a plate — the added depth thus obtained compensating to a large degree for any slight unevenness in the film surface. It is well, also, not to leave the slide out of the film pack holder any longer than necessary, for this allows more air to reach the film. If the air is warm and damp, the film that is exposed to it will absorb moisture, and will swell, thus causing it to bulge out. This may be overcome to a certain extent by changing the film, that is, drawing a new section into position, just before instead of just after the exposure. If the film pack holder slide is withdrawn before the bellows is extended, the suction caused by extending the bellows is apt to cause the film to bulge.

When using the sliding or cross front, the camera should be on a stand, and the camera body must be always in a perfectly perpendicular position.

The Plate holders

Plate holders of the single metal type and Film Pack adapters are used and fit in place of the focusing screen. The plates must be inserted in the dark-room, but an examination of the holders should be made before loading to see exactly how the plates will be inserted. A spring with two tongues is pressed back with the thumb, the plate is then inserted by slipping under the replate at the other end and pressed against while the spring is released. The two tongues then cover the plate and keep it in position.

The Exposure

After having finished focusing, remove the focusing screen by means of catch (k) and insert the plate holder. Regulate lens opening and shutter speed according to the efficient circumstances (page 13-16) and remove the sheath of the plate holder.

Take care not to touch the release till the very moment of exposure.

Expose by pressure on the release. Return the sheath into the plate holder, take this off and replace the focusing screen.

Closing the camera

As each part and fitting is placed in the smallest space possible, it is necessary to see that everything is in its normal position before attempting to close the camera. Then press on the two knobs (gg) and the focusing scale (e), push back the front as far as it will go till it is locked by the spring knob (g₁), and by depressing the two side struts (s), push the base-board against the

EXPOSURE SUGGESTIONS

Right exposure lies at the very foundation of all successful photography. The following are exposures for common subjects that will probably be not far out of the way. They are calculated for a lens-opening of F/6.3 and should give fairly full light action on fast film or plates.

Each succeeding larger opening requires only half the exposure of the foregoing, i. e. if F/6.3 works at $\frac{1}{100}$ of a second, F/4.5 will do the same at $\frac{1}{100}$ and F/3.5 at $\frac{1}{200}$.

Outdoors

Intense sunlight, no shadow detail required, such as open landscapes or views on the water, $\frac{1}{100}$ second.

Bright sunlight, open view, but some shadow detail required, $\frac{1}{60}$ second.

Open view in light that would be called "cloudy bright", or view with near objects lighted by sun, but containing more or less shadow details which should be plainly shown, $\frac{1}{10}$ to $\frac{1}{25}$ second.

Under trees or on a porch, where principal part of view is in shadow, whether partly illuminated by direct sunlight or not, $\frac{1}{5}$ to $\frac{1}{10}$ second.

Indoors

Portrait near window, well lighted and using reflector or having light from windows on two sides, $\frac{1}{5}$ to 1 second.

Interior view, well lighted by two or more windows, light not shut off by trees or other objects, 2 to 10 seconds. In the case of interior views it is usually advisable for the sake of depth (securing both near and distant objects sharply focused) to use a stop not larger than F/16 and lengthen the exposure accordingly. Remember that

camera body till it is locked by spring catch (a); if it does not close easily, do not use force, look again and make sure that the parts are in their proper positions [the brilliant view finder in position for vertical pictures, the front in the position marked by white dots, (z) or (y) pushed inward]. Be careful that the cable release, when being placed within the camera, does not damage the bellows.

GENERAL SUGGESTIONS

These suggestions apply generally to all plate cameras.

Keep camera and lens free from dust

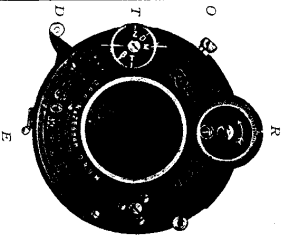
Dirt and dust are enemies of the photographer—especially dust, and especially to the user of a small camera. Dust is particularly annoying, not to say disastrous to good results, in the case of small negatives. For where in contact prints a few dust marks on the negative may do no harm, when an enlargement is made every dust mark is enlarged, and makes an ugly blemish on the print. Be careful, therefore, frequently to dust out the inside of the camera with a clean, lintless cloth or camel's-hair brush, or both. The lenses should also be kept clean, and should be unscrewed from their mounting occasionally, and carefully and gently wiped off with a soft cloth (an old but clean linen handkerchief is good) and afterward dusted with a camel's-hair brush. Be very careful not to scratch the lenses.

Important to focus correctly

It is a good plan to train one's ability at focusing before depending on the scale in actually making exposures. With the camera on a tripod or other firm support, open the lens and focus for various distances. Select some object that you judge to be ten feet from the camera,

Compur shutter

gives Time, Bulb and various instantaneous exposures.



For instantaneous exposures

first of all set the diaphragm scale (E) to the stop (aperture) required, then set the dial (T) with the letter M (I) against the pointer, revolve the dial (R) in the direction of the arrow, (from right to left, never in the opposite direction or it will be damaged), till the intended speed is opposite the indicator, then depress the lever (D) and the shutter is set. The exposure may be made by a pressure on the lever (D) or by using the flexible release inserted at (O).

Long time exposures

Set the dial (T) at Z (T), open the shutter by pressure on lever (D) or on the flexible release. A second pressure closes the shutter.

Short time exposures

Set the dial (T) at D (B) and open the shutter by pressure on release. Immediately this pressure ceases, the shutter will close.

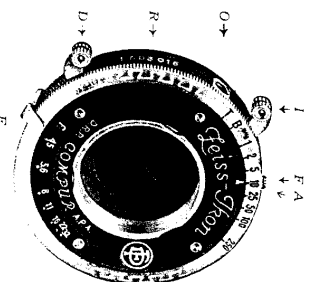
Note. The shutter is *automatic* for Time and Bulb exposures; lever (D) becomes then locked and no attempt must be made to use it.

The lens apertures, or stops, are regulated by the small lever (E), the diaphragm scale and indicator will be found at the top of the shutter, behind the dial (R).

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Compur Shutter Model «S»

(WITH DELAYED ACTION RELEASE)



- A = Index showing the exposure times
- D = Finger release for the shutter
- E = Diaphragm indicator
- F = Setting button for the delayed action release
- I = Setting lever for automatic speeds, and for exposures with delayed action release
- O = Bush in which to screw the flexible release
- R = Rotating ring for regulating the speeds which read off against index A

When delayed action release is not in use proceed as follows:

T Long Time exposures

Turn ring (R) till letter T is on the index mark (A). Pressure on lever (D) or on the flexible release inserted at (O) opens the shutter, which will remain open till a second pressure closes it.

B Short Time exposures

Turn ring (R) till letter B is on the index mark (A). Pressure on the release opens the shutter, which will close as soon as this pressure ceases.

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each successively smaller stop requires a doubling of the exposure, so that with F/16 a well lighted room would require an exposure of 12 seconds to 1 minute. Most interiors require a much longer exposure than that.

Overexposure isn't nearly so much to be feared as underexposure in the great majority of subjects.

Fortunately for the photographer who cannot always determine the absolutely correct exposure for the particular subject, the plate or film provides considerable latitude. If the right exposure for a given subject were, let us say, one second, probably anything from half a second to four seconds would give a very satisfactory result.

Camera should be held steady

Much of the amateur photographer's trouble can be traced to an unsteadiness of the camera at the instant of exposure. This results inevitably in a blurring of the details in the picture. It is especially important in the case of small negatives from which enlargements may be desired, that the camera be very steady when the exposure is made. The use of the flexible release is less likely to jar the camera than the trigger, and the reflecting finder is usually better to use than the direct vision finder for comparatively slow exposures with the camera held in the hand. Steady-handed people are readily able to make as slow an exposure as $1/100$ or even $1/8$ second without jarring the camera, but $1/25$ is about as slow as most people are sure of without a firm support for the camera.

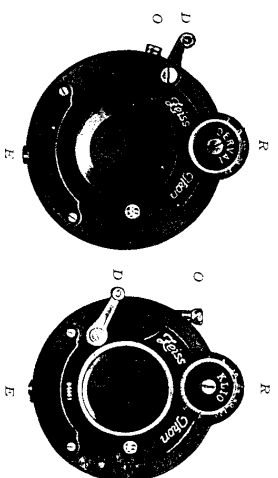
Use a tripod whenever you can

There is no law against using the camera on a tripod. It is really best to use a tripod or other firm support for even a very small camera when it is at all possible or convenient.

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Automatic shutters Deryval and Klio

Deryval for long and short time exposures and instantaneous speeds of $1/25$, $1/50$ and $1/100$ th of a second
Klio for long and short time exposures and instantaneous speeds of 1 , $1/2$, $1/4$, $1/8$, $1/16$, $1/32$, $1/60$ and $1/100$ th of a second



Long Time exposures

set the dial (R) at T (Z), open by pressure on lever (D) or preferably by the flexible release; a second pressure [closes the shutter.

Short Time exposures

set the dial (R) at B and open the shutter by pressure on release, immediately this pressure ceases, the shutter will close.

Instantaneous exposures

first of all set the diaphragm scale (E) to the "stop" or aperture required; then set the dial (R) till the intended speed is opposite the indicator, and the shutter is ready. The exposure may be made by depressing the lever (D) or by using the flexible release inserted at (O).

The lens apertures or stops are altered by moving the small lever (E), the diaphragm scale will be found engraved on the plate immediately above lever (E).

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